

## ARTICLE XV

### **WIND ENERGY CONVERSION SYSTEM – SMALL SCALE**

#### 15.01 Purpose

The purpose of this by-law is to accommodate small scale wind energy conversion systems in appropriate locations to reduce the on-site consumption of utility supplied electricity, to furnish wind-generated energy to the grid or to furnish electric power to an "off the grid" system, while respecting the scenic and rural character of the Town and minimizing adverse visual, safety and environmental impacts of the wind energy system.

#### 15.02 Applicability

The installation, operation and decommissioning of any WECS-SS system in the Town shall comply with this by-law. Wind energy conversion systems with rated nameplate capacity of more than 30 kilowatts (kW) are prohibited in the Town of Topsfield.

#### 15.03 Definitions

- A. Wind Energy Conversion System-Small Scale ("WECS-SS"): A wind energy conversion system typically consists of a wind turbine, generator, foundation, tower, support facilities, fencing and other safety equipment, power lines, transformers, associated interconnection equipment and related control and conversion equipment. A WECS-SS has a rated nameplate capacity of not more than thirty (30) kilowatts (kW).
- B. Height: The height of a wind turbine is the maximum vertical distance of the highest component of the system above the existing average grade within ten (10) feet of the centerline of the structure.
- C. Special Permit: A permit granted by the Special Permit Granting Authority for the installation of a WECS-SS.
- D. Wind Turbine: A device that converts kinetic wind energy into rotational energy that drives an electrical generator. A wind turbine typically consists of a tower, nacelle body, and a rotor.
- E. Rated Nameplate Capacity: The maximum rated output of electric power specified by an equipment manufacturer on the nameplate of a piece of equipment or wind turbine system.
- F. Tower: The structure on which the wind turbine is mounted.
- G. Off-grid: A stand-alone generating system not connected to or in any way dependent on the public utility grid.
- H. Wind Monitoring or Meteorological Tower ("MET tower"): A temporary tower used to gather wind data necessary for site evaluation and development of a wind energy project. In addition a MET tower can be equipped to record temperature, solar radiation and air pressure if necessary, but is not used for the purpose of generating electricity.

#### 15.04 Special Permit Requirements

- A. Special Permit. All applications for such permits shall be filed with the Special Permit Granting Authority in accordance with Article V, Section 5.04.

- B. Site Plan. Eight copies and one electronic file of the site plan must be submitted to the Special Permit Granting Authority, in accordance with Town of Topsfield Zoning By-laws, Article IX, Section 9.06, Submission Requirements and any other applicable by-laws, except that beyond ten feet of the centerline of the tower ten foot contours are acceptable.
- C. Certification: The proposed wind turbine must be approved by a small wind certification program recognized by the American Wind Energy Association or other entity acceptable to the Special Permit Granting Authority.
- D. Engineered Drawing Requirement: A Special Permit application for a WECS-SS shall be accompanied by standard drawings, certified by a professional engineer, of the wind turbine structure, the tower, base, footings, and/or foundation as provided by the manufacturer. Wet stamps shall not be required.
- E. Height: The height of any WECS-SS shall be no greater than 120 feet. The Special Permit Granting Authority may allow this height to be exceeded as part of the Special Permit process if the Applicant can demonstrate that the additional height is needed to ensure technical and economic feasibility and that the additional benefits of the higher tower outweigh any increased adverse impacts. However, in no case shall the total height of the WECS-SS exceed 150 ft.
- F. Dimensional and Density Provisions:
1. A horizontal axis wind turbine may not be sited within one and one-half times (1.5x) the height of the wind turbine from the nearest abutting property line as measured from the centerline of the tower. For a vertical axis turbine, the setback shall be one and one-tenth times (1.1x) the height.
  2. A wind turbine may not be sited within a distance equal to one times (1x) the height of the wind turbine from critical infrastructure, or private or public ways.
  3. A setback from a lot line of the lot on which the system is installed shall not be required if the owner(s) of the abutting lot (which may be the same as the Applicant) consents to a setback less than that set forth in F.1 above. Such consent shall be in writing and shall be included with the application. If the Special Permit Granting Authority determines that the setback diminution and the consent are reasonable, based upon the characteristics of the tower and lots, the setback diminution and consent may be approved. If approval is granted, the consent shall be recorded as a restrictive covenant on the abutting property before the Special Permit is released to the Applicant.
  4. Setbacks distances of the wind turbine may be reduced by the Special Permit Granting Authority based on site-specific criteria if the project is consistent with Section 15.04 O. Special Permit Approval Criteria and only after review of substantial evidence, including but not limited to detailed engineering reports or product engineering certification, which demonstrate that safety concerns have been minimized and that setbacks have been complied with to the maximum extent practicable. Setbacks for structures other than the wind turbine shall comply with the by-laws of the Town of Topsfield.
  5. No part of the WECS-SS support structure, including guy wire anchors, may extend closer to the property boundaries than the standard structure setbacks for the zoning district in which the land is located.
  6. WECS-SS may not be installed in a front yard or on the street-facing end of a building which borders the front yard unless the Special Permit Granting Authority determines that the system is a sufficient distance from the street to mitigate the visual impact.
  7. There shall be no more than one (1) horizontal axis system or two vertical axis systems per lot. On lots greater than ten (10) acres, the Special Permit Granting Authority may

permit additional units taking into consideration Section 15.04 O. Special Permit Approval Criteria.

- G. Noise: The operation of the WECS-SS shall conform with the provisions of the Department of Environmental Protection's, Division of Air Quality Noise Regulations (310 CMR 7.10) and its Noise Pollution Policy or superseding applicable state standards.
- H. Prevention of Tower Access: Climbing access to the tower shall be limited by one of the following methods: by placing climbing apparatus no lower than twelve (12) feet from the ground, or by placing shielding over climbing apparatus or access, or by installation of a fence with a locked gate that touches the ground with a minimum height of 8 feet.
- I. Compliance as required by the following:
  - 1. Regulations of the Federal Communications Commission (FCC)
  - 2. Massachusetts Uniform Building Code
  - 3. Regulations of the Federal Aeronautical Administration (FAA)
  - 4. National Electric Code
  - 5. Regulations of the Federal Energy Regulatory Commission (FERC)
- J. Utility Notification: No WECS-SS shall be installed until evidence has been given that the utility company has been informed of the customer's intent to install an interconnected customer-owned generator and an interconnection agreement has been approved by the utility. Off-grid systems shall be exempt from this requirement.
- K. Site Control: At the time of application for a special permit, the Applicant shall submit documentation of actual or prospective control of the project site sufficient to allow for installation and use of the proposed facility. Documentation shall also include proof of control over setback areas and access roads.
- L. Temporary Meteorological Tower (MET tower): A MET tower shall be permitted under the same standards as a WECS-SS, except that the requirements apply to a temporary structure. A permit for a temporary MET tower shall be valid for a maximum of one year after which an extension may be granted by the Special Permit Granting Authority upon demonstration of continued need. Small anemometers installed directly on buildings shall not require a Special Permit but may require a building permit.
- M. Exterior Lighting: A wind turbine shall be lighted only if required by the Federal Aviation Administration. Lighting of other parts of the wind energy facility, such as appurtenant structures, shall be limited to that required for safety and operational purposes, and shall be shielded from abutting properties as approved by the Special Permit Granting Authority.
- N. Support Towers: Monopole towers shall be used as the support structure for Wind Turbines; this requirement may be waived by the Special Permit Granting Authority for good cause at the discretion of the Special Permit Granting Authority.
- O. Special Permit Approval Criteria: In addition to meeting the conditions for Special Permits in Article V, Section 5.04, any Special Permit granted for a WECS-SS shall meet the following conditions:
  - 1. The specific site is an appropriate location for such use including but not limited to consideration of noise, flicker, shadow and visual impact;
  - 2. The use will not pose a significant adverse impact to the health and safety of the neighborhood;
  - 3. The proposed WECS-SS will pose no hazard to persons or property;
  - 4. Adequate and appropriate infrastructure will be provided for the proper operation of the WECS-SS.

The Special Permit may include reasonable conditions, addressing among others, safeguards and limitations and requirements for the Applicant to implement measures to reasonably protect the neighborhood. The Special Permit may require the Applicant to implement all reasonable measures to mitigate unforeseen adverse impacts of the wind energy conversion system should they occur.

- P. As-Built Plan: The system shall not commence operation until an “As-Built” plan and a certificate of compliance have been submitted to the Special Permit Granting Authority and the Inspector of Buildings representing that the system has been constructed substantially in compliance with the plan approved by the Special Permit Granting Authority. Said certificate and plan shall be signed and stamped by a registered professional engineer licensed in the Commonwealth of Massachusetts.
- Q. Abandonment And Decommission: A WECS-SS or a MET tower will be considered to be abandoned if it is not operated for its intended purpose for a period of one year, or considered hazardous by the Inspector of Buildings. Once a WECS-SS or MET tower is designated as abandoned or hazardous, the owner shall mitigate the hazardous condition within thirty days or shall immediately physically remove the installation, which shall include, but not be limited to:
1. Removal of WECS-SS, any equipment shelters and security barriers from the subject property;
  2. Proper disposal of the waste materials from the site in accordance with local and state solid waste disposal regulations;
  3. Re-vegetation of the site of the WECS-SS to its natural condition. The Inspector of Buildings may allow the owner to leave below-grade foundations and landscaping in order to minimize erosion and disruption to vegetation.

The Town retains the right, after the receipt of an appropriate court order to enter and remove an abandoned or hazardous WECS-SS or MET tower that is not removed by the property owner within six (6) months from the date of abandonment. All WECS-SS and MET tower removal and associated costs will be charged to the property owner in accordance with the provisions of M.G.L. 139, Section 3A as a tax lien on the property.

- R. Severability: All the clauses of this by-law are distinct and severable, and if any clause shall be deemed illegal, void, or unenforceable, it shall not affect the validity, legality, or enforceability of any other clause or portion of this by-law.